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L-03-210

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334 License No. DPR-66
LER 2003-007-00

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 2003-007-00, 10 CFR 50.73(a)(2)(iv)(A), "Inadvertent Reactor Trip During Solid State Protection System Testing."

L. William Pearce

Attachment

c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. P. C. Cataldo, Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator
INPO Records Center (via electronic image)
Mr. L. E. Ryan (BRP/DEP)

IE22

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Inadvertent Reactor Trip During Solid State Protection System Testing

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	13	2003	2003	- 007 -	00	01	07	2004	None	
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	1
10. POWER LEVEL	100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
20.2203(a)(1)	50.36(c)(1)(i)(A)	X 50.73(a)(2)(iv)(A)	73.71(a)(4)
20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	
20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)	
20.2203(a)(2)(v)	50.73(a)(2)(i)(B)	50.73(a)(2)(vii)	
20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)	
20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
L. R. Freeland, Manager Regulatory Affairs / Performance Improvement	(724) 682-5284

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

At 1135 hours on November 13, 2003, the Beaver Valley Power Station Unit 1 reactor received an unexpected automatic reactor trip signal while operating at 100 percent power. The reactor trip signal was inadvertently generated during the performance of a maintenance surveillance procedure on the Solid State Protection System. Instrument and Control Technicians connected a digital volt meter (DVM) across the incorrect terminals in the Reactor Trip Breaker Switchgear cabinet when verifying breaker position contact state. This incorrect action created a current path across an open contact and energized the turbine trip relay. The turbine trip initiated an automatic reactor trip. The operating crew entered Emergency Procedure E-0, and transitioned to ES-0.1 in response to the trip. During the event, all required plant safety systems responded as required. This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in automatic actuation of systems listed in 10 CFR 50.73(a)(2)(iv)(B)(1).

The cause was self-checking and peer checking that did not meet expectations. The 'B' train of Solid State Protection System (SSPS) had just been returned to service, exiting the applicable Action of the technical specifications (a two hour allowed outage time). Because the crew had exited the time critical portion of the technical specification, they did not complete the remaining portion of the surveillance procedure with the same sense of rigor as was used in the prior steps. The safety significance of this event was low.

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PLANT AND SYSTEM IDENTIFICATION

Westinghouse-Pressurized Water Reactor {PWR}
Plant Protection System {JC}
Main Turbine System {TA}

CONDITIONS PRIOR TO OCCURRENCE

Unit 1: Mode 1 at 100 percent power

There were no systems, structures, or components that were inoperable at the start of the event that contributed to the event other than as described below.

DESCRIPTION OF EVENT

At 1135 hours on November 13, 2003, the Beaver Valley Power Station (BVPS) Unit 1 reactor received an unexpected automatic reactor trip signal while operating at 100 percent power. The first annunciator received was window A5-46 "Manual Turbine Trip at Turbine." The reactor trip signal was inadvertently generated during the performance of maintenance surveillance procedure 1MSP-1.05-I, "Solid State Protection System Train B Bi-Monthly Test". Instrument and Control Technicians connected a digital volt meter (DVM) across the incorrect terminals in the reactor trip breaker switchgear cabinet when verifying breaker position contact state. This incorrect action created a current path across an open contact and energized the turbine trip relay. The turbine trip initiated an automatic reactor trip since the reactor was above 49 percent power. The operating crew entered Emergency Procedure E-0, and transitioned to ES-0.1 in response to the trip. During the event, all required plant safety systems responded as required.

In detail, the step in the surveillance procedure being performed verifies that contact 52B-BYB (terminals BYB-13 and BYB-14) is CLOSED indicating that reactor trip bypass breaker B is OPEN. However, the technicians incorrectly connected a DVM set to read resistance (ohms) across contact 52B-RTB (terminals RTB-13 and RTB-14). A DVM with ohm function selected has a low input impedance. This meter was connected across the incorrect contacts, thus, providing a current path through the meter input and energizing relay 52B-RTBX. This current energized the backup turbine trip solenoids resulting in a turbine trip.

REPORTABILITY

An inadvertent turbine trip occurred on November 13, 2003. This resulted in an automatic actuation of the Reactor Protection System (reactor trip). This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in automatic actuation of systems listed in 10 CFR 50.73(a)(2)(iv)(B)(1). The NRC was notified that an automatic reactor trip occurred at BVPS Unit 1 which was reported pursuant to 10 CFR 50.72 (b)(2)(iv)(B) and (b)(3)(iv)(A) at 1323 hours on November 13, 2003 (ENS No. 40320).

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CAUSE OF EVENT

The cause was self-checking and peer checking that did not meet expectations. The 'B' train of Solid State Protection System (SSPS) had just been returned to service, exiting the applicable Action of the technical specifications (a two hour allowed outage time). Because the crew had exited the time critical portion of the technical specification, they did not complete the remaining portion of the surveillance procedure with the same sense of rigor as was used in the prior steps. The crew's perception of risk diminished while completing the final restoration steps of the procedure.

SAFETY IMPLICATIONS

Following the automatic reactor trip, the control rods fully inserted into the reactor core and the required safety systems operated as designed. Emergency Operating Procedure E-0 for reactor trip was performed and the plant was stabilized in Mode 3.

This event was an inadvertent turbine trip causing a reactor trip, which is less severe than the design basis event for a Loss of External Electrical Load or Turbine Trip, which is analyzed in the BVPS Unit 1 Updated Final Safety Analysis Report (UFSAR) Section 14.1.7. Comparison of the UFSAR Loss of External Electrical Load/Turbine Trip transient with the November 13, 2003 event indicates that BVPS Unit No. 1 operated conservatively with respect to the UFSAR described transient and its input assumptions. The actual plant response on November 13, 2003 was bounded by the UFSAR analysis for a Loss of External Electrical Load/Turbine Trip.

The plant risk associated with the BVPS Unit 1 reactor trip that occurred on November 13, 2003, due to an inadvertent turbine trip is considered to be low. This is based on the conditional core damage probability for the event when considering the actual component unavailability that was present at the time of the reactor trip.

Based on the above, the safety significance of the reactor trip on November 13, 2003, was low.

CORRECTIVE ACTIONS

1. Remedial training was performed for Instrument and Control (I & C) individuals emphasizing the need for self checking. In addition, each I & C technician and supervisor documented their review of this event to reinforce the importance of self checking, peer checking, and precise communication skills. Individuals who have not yet completed remedial training are not qualified to perform SSPS testing or repair until this remediation is complete.

2. The subject maintenance surveillance procedure and similar procedures were revised to address several procedural enhancements.

3. Additional labels / placards were installed as enhancements.

4. This event will be incorporated into various maintenance continuing training modules as an enhancement to reinforce the use of human performance tools.

Completion of the above and other corrective actions are being tracked through the corrective action program.

PREVIOUS SIMILAR EVENTS

A review of past Beaver Valley Power Station reportable events for the last four years found two similar BVPS Licensee Event Reports involving inadvertent reactor trips caused by human performance issues.

BVPS Unit 1 LER 2003-001, "Safety Injection and Reactor Trip Due to Inadvertent Main Steam Isolation Valve Closure."

BVPS Unit 1 LER 2001-002, "Manual Reactor Trip During Plant Shutdown."

ATTACHMENT

Beaver Valley Power Station, Unit No. 1
License Event Report 2003-007-00

Commitment List

The following list identifies those actions committed to by FirstEnergy Nuclear Operating Company (FENOC) for Beaver Valley Power Station (BVPS) Unit No. 1 in this document. Any other actions discussed in the submittal represent intended or planned actions by Beaver Valley. These other actions are described only as information and are not regulatory commitments. Please notify Mr. Larry R. Freeland, Manager, Regulatory Affairs/Performance Improvement, at Beaver Valley on (724) 682-5284 of any questions regarding this document or associated regulatory commitments.

Commitment	Due Date
None	N/A